

# PLEASURE TEST REVISION SERIES X

Mathematics By OP Gupta [+91-9650 350 480]

Max. Marks: 90

Time Allowed: 3Hours

## Section A

Each question carries 1 mark.

- For the quadratic equation  $x^2 + 2x + 1 = 0$ , the value of  $x + \frac{1}{x}$  is:  
(i) -1 (ii) 1 (iii) -2 (iv) 2
- When we lower, our head to look at the object, the angle formed by the line of sight with the horizontal is:  
(i) angle of depression (ii) angle of elevation (iii) acute angle (iv) None of these
- In fig.1, if tangents PA & PB are drawn to a circle such that  $\angle APB = 30^\circ$  & chord AC is drawn  $\parallel$  to the tangent PB then  $\angle ABC$  is:

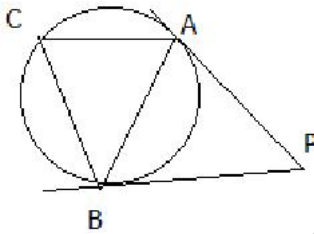


Fig.1

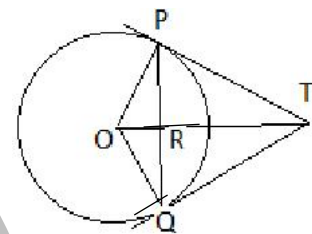


Fig.2

- (i)  $30^\circ$  (ii)  $45^\circ$  (iii)  $60^\circ$  (iv)  $90^\circ$
- If the equation  $kx^2 + 4x + 1 = 0$  has real & distinct roots, then:  
(i)  $k < 4$  (ii)  $k > 4$  (iii)  $k \leq 4$  (iv)  $k \geq 4$
- A chess board has 64 equal squares & the area of each square is  $6.25\text{cm}^2$ . A border around the board is 2cm wide. The length of the side of the chess board is:  
(i) 24cm (ii) 25cm (iii) 26cm (iv) 20cm
- The surface area of a cube is equal to that of the sphere, then the ratio of their volumes is:  
(i)  $6 : \sqrt{\pi}$  (ii) 11 : 15 (iii) 15 : 11 (iv) None of these
- A cone is cut into 2 parts by the horizontal plane passing through the mid-point of its axis, the ratio of the volumes of the upper part & the cone is:  
(i) 1 : 2 (ii) 1 : 4 (iii) 1 : 6 (iv) 1 : 8
- If the radius of the circle is diminished by 10% then the area will be diminished by  
(i) 10% (ii) 20% (iii) 9% (iv) 19%

## Section B

Each question carries 2 marks.

- Neha saves ₹2 on first day of the month, ₹4 on second day, ₹6 on third day and so on. What will be her saving in the month of February 2012? What value is depicted by Neha?
- A number x is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3, 4 find the probability that  $|x| < 2$ .  
**OR** A number x is selected from the numbers 1, 2, 3 and then a second number y is randomly selected from the numbers 1, 4, 9. What is the probability that the product 'xy' of the two numbers will be less than 9?
- The perimeter of right  $\Delta$  is 60cm. Its hypotenuse is 25cm. Find the area of the right  $\Delta$ .
- The sum of the first 6 terms of the AP is 42. The ratio of its 10<sup>th</sup> term to its 30<sup>th</sup> term is 1: 3. Calculate the 1<sup>st</sup> and the 13<sup>th</sup> term of the AP.
- $PO \perp QO$ . The tangents to the circle at P & Q intersect at point T. Prove that PQ & OT are right bisectors of each other. [See fig.2]
- ABC is an equilateral  $\Delta$  inscribed in a circle of radius 4cm with centre O. Find the area of the shaded region in the figure given here. [See fig.3]

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### Section C

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Each question carries 3 marks.

15. A cylindrical pipe has inner diameter 7cm & water flows through it at 192.5 litres per minute. Find the rate of flow in kilometers per hour.
16. If P (x, y) is any point on the line joining the points A (a, 0) and B (0, b). Then show that  $\frac{x}{a} + \frac{y}{b} = 1$ .

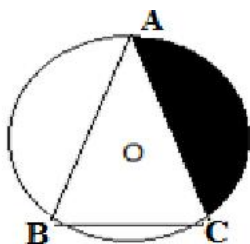


Fig.3

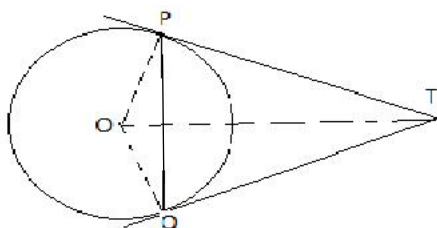


Fig.4

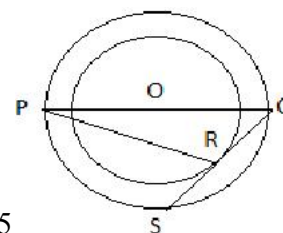


Fig.5

17. Find the points on the y axis whose distances from the points (6, 7) and (4, -3) are in the ratio 1:2.
18. A selection committee interviewed some people for the post of Sales Manager. The committee wanted that the female candidates should also be given the fair chance. So they called male and female candidates in 3:4 ratio. What is the probability of a female candidate being selected? Which value is shown by the selection committee?
19. Two pipes running together can fill a cistern in 6 minutes. If one pipe takes 5 minutes more than the other to fill the cistern, find the time in which each pipe would fill the cistern.
20. If an AP consists of n terms with 1<sup>st</sup> term a & n<sup>th</sup> term l. Show that the sum of the m<sup>th</sup> term from the beginning & m<sup>th</sup> term from the end is a + l.
21. Two tangents TP & TQ are drawn to a circle with centre O from an external point T. Prove that  $\angle PTQ = 2\angle OPQ$ . [See fig.4]
22. Let ABC be a right  $\Delta$  in which AB = 3 cm, BC = 4cm &  $\angle B = 90^\circ$ . BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct tangents from this point to the circle.
23. Three horses are tied to three vertices of a  $\Delta$  having sides 10m, 12m and 14m with ropes of length 7m each, find the area grazed by the 3 horses.  
**OR** A farmer has two types of fields, one is in the form of a squared area  $144\text{m}^2$  and another is in the form of a rectangle of sides 16m and 8m. Farmer wants to fence his field. So he gave this work to Ramesh for Square field and Sarita for rectangular field. Find the Length of fencing of both the fields. Which value is depicted here?
24. Water is flowing at 5 km/hr through a pipe of diameter 14cm into a rectangular tank which is 50m long & 44m wide. Determine the time in which the level of the water in the tank will rise by 7cm.

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### Section D

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Each question carries 4 marks.

25. The angle of elevation of a bird observed by a hunter who is 12m above a lake is  $30^\circ$  and the angle of depression of bird's reflection in the lake is  $60^\circ$ . Find the distance between the bird and the hunter. What value is used by the hunter if he wants to hit the bird?
26. Let the opposite angular points of a square be (3, 4) and (1, -1). Find the coordinates of the remaining angular points.
27. If P(2, -1), Q(3, 4), R(-2, 3) and S(-3, -2) be four points in a plane, show that PQRS is a rhombus but not a square. Also, find the area of the rhombus.
28. Two dice are thrown simultaneously. What is the probability that (i) 4 will not come up on either of them. (ii) 4 will come up on at least once (iii) 4 will come up at both dice.

29. There is a square field whose side is 44m. A square flower-bed is prepared in its centre leaving a gravel path all around the flower bed. Total cost of laying the flower bed and gravelling the path at ₹2.75 and ₹1.50 per sq.metre respectively is ₹4904. Determine the width of the gravel path.  
**OR** A swimming pool is filled by 3 pipes with uniform flow. The first two pipes operating simultaneously, fill the pool in the same time during which the pool is filled by the 3<sup>rd</sup> pipe alone. The 2<sup>nd</sup> pipe fills the pool 5 hours faster than the 1<sup>st</sup> pipe & 4 hours slower than the 3<sup>rd</sup> pipe. Find the time required by each pipe to fill the pool separately.
30. Find the sum of numbers from 1 to 100 which are neither divisible by 2 nor by 5.
31. In two concentric circles with centre O, PQ is diameter of outer circle and QS is the tangent line to the inner circle touching it in R and outer circle in S. Find the length of PR, if radii of two circles are 13cm and 8cm. [See fig.5]
32. Total height of a plumb-line is 14cm, its radius is 7cm. Find its volume and total surface area.
33. A milk container is made of metal sheet in the shape of frustum of a cone whose volume is  $10459 \frac{3}{7} \text{cm}^3$ .  
 The radii of the lower and the upper ends is 8cm and 20cm respectively. Find the cost of metal sheet used in making the container at ₹1.50per cm<sup>2</sup>. How is the milk beneficial for health?
34. From the top of a building AB, 60m high, the angles of depression of the top & bottom of a vertical lamp post CD are observed to be 30° and 60° respectively. Find  
 (i) The horizontal distance between AB and CD.  
 (ii) The height of the lamp post.  
 (iii) The difference between the heights of the building and the lamp post.

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